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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/705,218	11/12/2003	Keith Frank Best	081468-0306625	4107

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EXAMINER
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CHACKO DAVIS, DABORAH

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/705,218

Applicant(s)

BEST ET AL.

Examiner

Daborah Chacko-Davis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                                            |                                                                                         |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                           | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5, 8, 10-27, are rejected under 35 U.S.C. 102(b) as being anticipated by U. S. Patent No. 5,436,173 (Houston).

Houston, in the abstract, in col 3, lines 31-67, in col 4, lines 1-67, in col 5, lines 1-54, figures 1a through 1e, discloses forming a semiconductor device includes patterning a substrate (first substrate) on its first surface with alignment markers (trenches, reference 12), forming a protecting layer (insulating layer) over the alignment markers, bonding the substrate with alignment marks (first substrate) with another substrate (second substrate, using a front-backside alignment mechanism) and etching the insulating layer till the protective layer is exposed and forming trenches (references 18a, 18b, 18c) around the alignment markers, forming a patterned layer on the second surface of the first substrate (figure 1e) lithographically, and using the alignment marks to align the first alignment mark with that of the reverse alignment mark (mirror image of the alignment mark with reverse attributes) (claims 1, 4, 11, 14, 18, 19, and 27).

Houston, in col 3, lines 45-67, discloses that the insulator layer (protective layer) perform as an etch stop and includes SiO<sub>2</sub> (oxides of dielectric or combination of

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dielectric material) (claims 2-3, 20). Houston, in col 5, lines 1-22, discloses that the prior to bonding a reflective layer is formed on the protective layer, and devices are formed on the reflective layer, wherein intervening layers are selectively removed (utilizing etching and photolithographic techniques) (claims 5, 8, 10, 21-23). Houston, in col 3, lines 45-62, in col 4, lines 60-68, discloses forming the alignment marks and the corresponding reverse alignment marks photolithographically (claims 12, 16, 24). Houston, in col 4, lines 10-55, in col 7, lines 51-67, in col 8, lines 1-27, discloses photolithographically patterning and etching the etch resistant layer on the second surface of the first substrate to form openings (after removing the insulator layer) above the trench (see figure 4d) (claims 13, and 25). Houston, in col 5, lines 43-68, in col 6, lines 1-21, discloses etching the first substrate (using CMP) resulting in a reduction of thickness (claim 15). Houston, in col 6, lines 9-31, discloses forming at least one alignment marker that is positioned relative to the reverse alignment marker (on the second surface of the first substrate) revealed by the trenches (see figure 2h) (claims 17, and 26).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 6-7, and 9, are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 5,436,173 (Houston) in view of U. S. Patent No. 6,180,498 (Geffken et al., hereinafter referred to as Geffken).

Houston is discussed in paragraph no. 2.

Houston, in the abstract, in col 3, lines 31-35, discloses forming a semiconductor device (claims 7, and 9).

The difference between the claims and Houston is that Houston does not disclose that the reflective layer is aluminum (claim 6).

Geffken, in col 2, lines 61-67, in col 3, lines 1-9, discloses that the reflective layer formed on the alignment mark area is an aluminum layer.

Therefore, it would be obvious to a skilled artisan to modify Houston by employing aluminum as the reflective layer as suggested by Geffken because Geffken, in col 5, lines 25-31, discloses that the aluminum reflective layer provides a substantial uniform optical background, and the edges of the aluminum layer provide contrast for alignment of the semiconductor.

### ***Response to Arguments***

5. Applicant's arguments filed July 18, 2006, have been fully considered but they are not persuasive. The 102 and 103 rejections made in the previous office action (paper no. 0313) are maintained.

A) Applicants argue that Houston does not disclose that the reverse alignment mark is a mirror image of the normal alignment mark.

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Houston teaches forming alignment marks in the substrate or semiconductor layer, wherein the trenches define the alignment marks, and they are mirror images of each other.

B) Applicants argue that Houston does not teach that the second marker has a reverse attribute of the first marker.

Houston teaches forming alignment markers on the semiconducting layer that have reverse attributes such that some of the trenches are used to define the alignment marker, and some of the trenches are defined as mesas, whereas some of the trenches that define alignment markers can be used as isolation bodies.

### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daborah Chacko-Davis whose telephone number is (571) 272-1380. The examiner can normally be reached on M-F 9:30 - 6:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dcd

September 30, 2006.



JOHN A. MCPHERSON  
PRIMARY EXAMINER